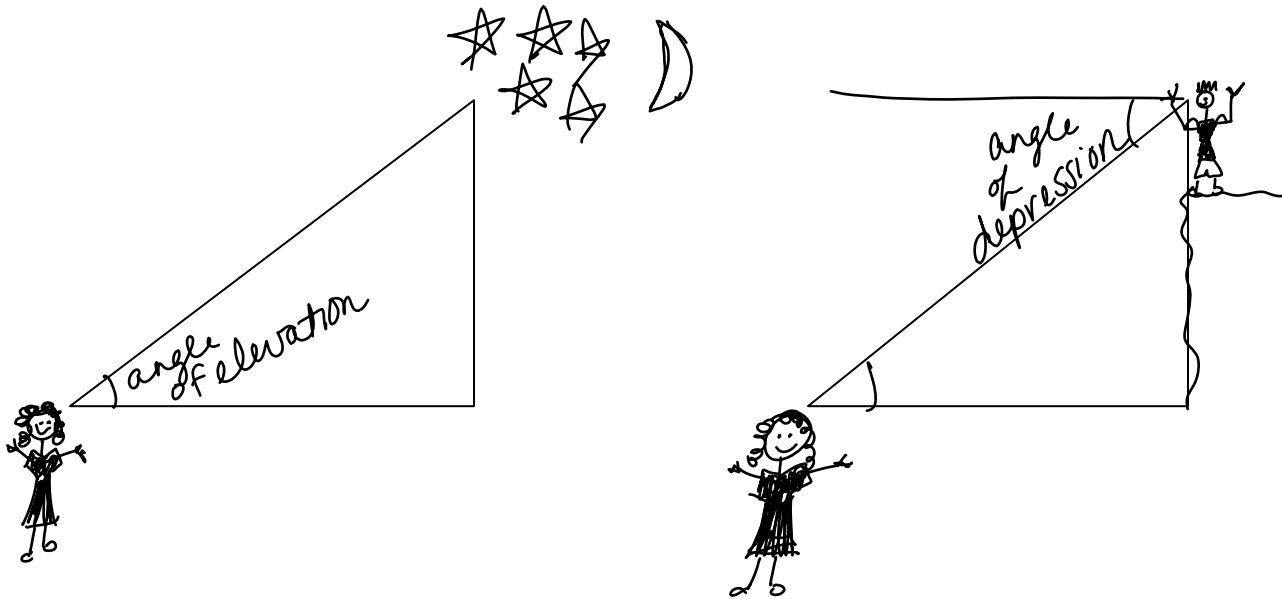
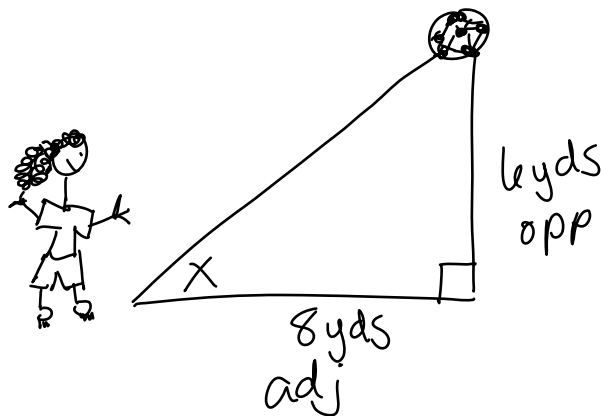


## 8.5 Angles of Elevation and Depression

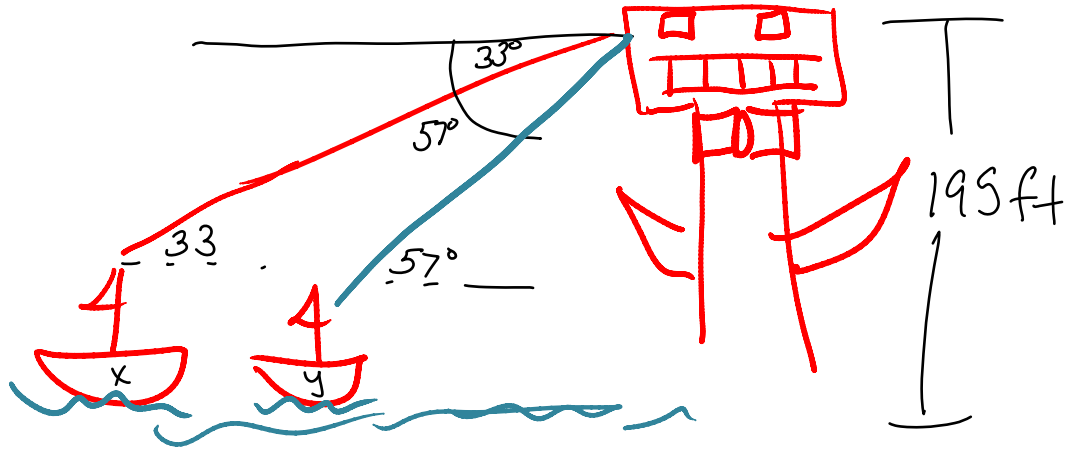


Ex. 1 Mrs. McMahan kicks a soccer ball. When the ball is 8 yards away from her, the ball is 6 yards high. What is the angle of elevation?



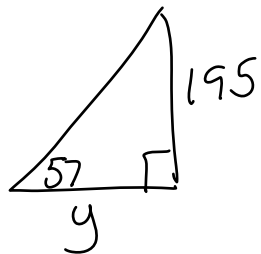
$$\tan x = \frac{6}{8} = \frac{3}{4}$$
$$\tan^{-1}\left(\frac{3}{4}\right)$$
$$36.9^\circ$$

Ex. 2 Hannah is in a lighthouse that is 195ft tall. She observes two sailboats due east of the lighthouse. The angles of depression to the two boats are 33° and 57°. What is the distance between the sailboats?



$$\begin{array}{c} \text{195} \\ \text{33} \\ \text{X} \\ \tan 33 = \frac{195}{X} \\ \frac{X \tan 33}{\tan 33} = \frac{195}{\tan 33} \end{array}$$

$$X = 300.27 \text{ft}$$



$$\begin{array}{c} \text{195} \\ \text{57} \\ \text{y} \\ \tan 57 = \frac{195}{y} \\ \frac{y \tan 57}{\tan 57} = \frac{195}{\tan 57} \end{array}$$

$$y = 126.63 \text{ft}$$

$$\begin{array}{r} 300.27 \\ -126.63 \\ \hline 173.64 \text{ft} \end{array}$$